Responding to positive and negative assertions in German Sign Language (DGS)

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RESPONSE PARTICLES like *yes* and *no* in principle fulfil two functions. They may affirm or reject a previous utterance, i.e. indicate its truth (*yes*-type particles affirms the truth (1bi/2bii); *no*-type answers reject it (1bii/2bi)), or they may indicate that the response to the previous utterance has positive or negative polarity (*yes*-type particles indicate positive polarity (1bi/2bi), *no*-type particles indicate negative polarity (1bii, 2bii)). As languages vary with respect to the number and the functions of response particles, early accounts of response particle systems proposed that languages choose between truth-based and polarity-based systems for *yes/no*-type particles [9,6], and that there may be dedicated particles like German *doch*, French *si* for specific discourse conditions. However, it has been shown that a clean partition into truth-based vs. polarity-based systems is rare, independently of the presence or absence of dedicated particles [2,8,11]. Preferences for particles are often gradient rather than categorical (see (1/2) for acceptability judgments on English). Therefore, more fine-grained analyses have been proposed, which analyse particles as anaphora [7,12] or as remnants of ellipsis [5]. On one anaphora account [12], response particles realise a polarity head which carries absolute features (signaling the polarity of the response clause) and relative features (signaling that response clause and antecedent have the same vs. different polarity) [12]. A given response particle encodes either one or both feature types. This proposal accounts for subtle language-specific preferences for encoding truth- vs. polarity-based response strategies via a set of ranked pragmatic constraints such as AVOID AMBIGUITY, REALIZE RELATIVE FEATURES (truth-based system), and REALIZE ABSOLUTE FEATURES (polarity-based).

EXPERIMENTAL INVESTIGATIONS on spoken languages [1,2,8,12] have called some of these proposals into question because they showed that there is significant inter-individual variation, which is not well understood. The impact of non-lexical marking strategies like intonation or gesture has not been investigated systematically but there are indications that these matter [2,4]. When it comes to the visual-gestural modality, little is known about response particles in sign languages (but see [3] on ASL). Sign languages are of particular interest since they have multiple articulatory channels available which may simultaneously encode truth and polarity.

THE PRESENT STUDY provides experimental data from a production experiment with 24 deaf native DGS signers, which explored responses to positive and negative assertions. The experiment had a 2x2 **design** with the factors ANTECEDENT POLARITY (positive/negative) and RESPONSE TYPE (affirm/reject), with 24 items per condition, resulting in 96 trials, distributed over 2 randomized lists. Each list contained 12 affirmations and 12 rejections of positive propositions, and 12 affirmations and 12 rejections of negative propositions. The lists were presented in regular or reversed order. Participants were presented with 48 short scenarios containing a dialogue between two interlocutors (Peter, Alex), see (3). Peter signed a positive or negative assertion. Participants were asked to take on Alex's role and complete the dialogue according to the knowledge provided in the scenario. In (3), they were expected to affirm Peter's assertion e.g. by using a bare response particle or a full response clause. All responses were video-recorded.

RESULTS. Over 90% of responses contained at least one response element (RE). The REs STIMMT 'right', STIMMT-neg/STIMMT NICHT 'not right', FALSCH 'wrong' and bare mouthing *stimmt* encode only relative polarity features and account for 36% of the responses. JA 'yes' occurred predominantly in affirmations (88%, expressing agreement), but also in rejections of negative antecedents (12%, expressing pos. polarity). NEIN 'no' occurred predominantly in rejections (94%, expressing disagreement) but also in affirmations of negative antecedents (6%, expressing neg. polarity). In

affirmations, ambiguous REs are significantly more frequent in responses to positive than to negative antecedents (b = 0.47, p < 0.001). Aside from manual REs, signers employed the purely non-manual response strategies head movement (7%) and bare mouthings (3%). Head movements occurred more frequently in response to negative antecedents (b = -0.42, p < 0.01) and exhibited the same ambiguity as JA/NEIN: While both can encode (dis)agreement or polarity, head nods are clearly preferred for affirmation over pos. polarity and head shakes occur more frequently in rejections than to signal neg. polarity (b = -4.53, p < 0.01). When head movements co-occur with manual REs, they perform the same function (e.g. NEIN + head shake typically rejects an antecedent but in 8.5% of cases affirms a neg. antecedent). Mouthings accompanying manual REs also occur more frequently after negative antecedents (b = 0.36 p < 0.01) and show concord with the manual sign. One notable exception is *doch*, which like its German counterpart encodes [disagree, +] and which in DGS accompanies JA to reject negative antecedents (3%).

DISCUSSION. DGS has both manual and non-manual REs that either map onto only relative features or onto relative or absolute features. The latter comprise JA, NEIN, head nod, and head shake. Their preferential use in (dis)agreement marking indicates a high ranking of REALIZE RELATIVE FEATURES, i.e. DGS favours a truth-based response system in both its manual and non-manual REs. There is some inter-individual variation but to a much lesser extent than e.g. in spoken German, where speakers seem to fall into two groups for affirmations of negative assertions [1] or in Dutch [11]. Additionally, we saw evidence that AVOID AMBIGUITY is operative in DGS: Recall that ambiguous REs are only problematic in responses to negative antecedents and it is precisely there that we find significantly more non-manual marking of REs via head movement, eyebrow movement and mouthing. We also find significantly more ambiguous REs in responses to positive antecedents than negative ones. Lastly, we found that if a second RE followed an ambiguous RE1, it served a disambiguating purpose more often in responses to negative antecedents (b = 3.10, p < 0.05). In terms of current theorizing we may interpret our findings as an indication of a multi-response system where non-manual markers have very similar specifications to manual signs rather than complementing them: there are simply more *yes*-type and *no*-type "particles" available. These can be described e.g. in terms of semantic feature specifications for anaphora in a system like [12]. The advantage of such an interpretation is that the independent use of the communication channels to signal rejection / affirmation could be explained as well.

(1) a. Anna smokes.	b. i. Yes (she does)	ii. No (she doesn't)
(2) a. Anna doesn't smoke.	b. i. Yes/?No (she does)	ii. ??Yes/No (she doesn't)

(3) *Scenario*: Peter and Alex are having their front yard redesigned. This morning, Alex talked to the gardener. The gardener told Alex that he wouldn't be able to sow the lawn for another few days because of bad weather. During lunch, Peter and Alex discuss the gardener and their new front yard.

Peter:

	br		hs
GÄRTNER	RASEN	SÄEN	NOCH-NICHT
gardener	lawn	mow	not-yet

'The gardener hasn't sown the lawn yet.'

Alex: … (Response)

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